

### REMARKS

Applicant requests reconsideration of the present application in view of the foregoing amendment and the discussion that follows. The status of the claims is as follows. Claims 1-39 were originally filed and are currently pending. Claims 22-39 were withdrawn from consideration and these claims were canceled herein without prejudice to Applicant's filing of divisional applications to what has been determined to be the separately patentable subject matter thereof. Claims 1, 4, 7, 14, 15, 16, 17 and 20 have been amended herein. Claims 40-62 were added.

#### Restriction Requirement

Applicant acknowledges the implicit finding in the Office Action that the inventions of the groups set forth are separately patentable, i.e., novel and unobvious, over one other.

#### The Amendment

Claims 1, 4, 7, 14, 15, 16, 17 and 20 were amended to address the rejections in the Office Action under 35 U.S.C. 112, second paragraph. These amendments find support, for example, in the claims as originally filed.

Claim 1 was amended to correct the paragraph lettering. Claim 1 was also amended to recite that the perforated element is substantially perpendicular to the gas inlets. Support therefor is in the specification, for example, Figs. 1 and 2 and page 16, lines 12-21.

Claim 7 was amended to indicate that the device for dispensing reagents is a drop dispensing device and the mechanism of (e) is a mechanism for moving a support relative to the drop dispensing device. Support therefor is in the specification, for example, original Claim 1 and page 24, last line.

Claim 40 was added and finds support in the specification, for example, page 24, last line.

Claim 41 was added and finds support in the specification, for example, original Claim 1 and page 8, lines 22-28.

Claims 41-53 were added and depend from Claim 40. Claims 41-53 are supported in the specification, for example, Claims 42-44 (original Claims 4-6, respectively), Claims 45-46 (page 24, last line), Claim 47 (page 30, lines 1-60) and Claims 48-53 (original Claims 10-12, 14, 17 and 21, respectively).

Claim 54 was added and finds support in the specification, for example, original Claim 1 and page 10, lines 2-5.

Claims 53-62 were added and depend from Claim 54. Claims 53-62 find support in the specification, for example, Claim 55 (original Claim 10), Claim 56 (page 11, lines 31-32), Claims 57-58 (page 24, last line), Claim 59 (page 30, lines 1-60) and Claims 60-62 (original Claims 12, 17 and 9), respectively.

### The Drawings

Applicant submits that the formal drawings provided herewith in the form of replacement sheets fulfill the requirement in the Office Action with regard to the drawings.

### Rejection under 35 U.S.C. §112

Applicant believes that the amendments to the claims obviate the rejections under the second paragraph of the above code section.

### Rejection under 35 U.S.C. §103

Claims 1-3, 5, 7-10 and 12-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wagener, *et al.* (U.S. Patent No. 6,251,195) (Wagener) in view of Sharma, *et al.* (U.S. Patent No. 5,195,888) (Sharma).

Wagener discloses an apparatus having a processing chamber for processing a semiconductor wafer under evacuated conditions that is capable of transfer of the wafer from the processing chamber under conditions that are substantially equal to the pressure of an adjacent environment. In an embodiment, the processing chamber is pressurized and vented with a source of high purity dry gas that is diffused into the chamber through a diffuser to pressurize the processing chamber after processing of the wafer is completed. A chamber equalization port between the processing chamber and the adjacent environment is opened to maintain the pressure within the chamber at or slightly above the pressure of the adjacent environment, and the chamber valve is then opened. The wafer can then be removed from the processing chamber, and a new wafer can be inserted. Closing the chamber valve and the equalization port then seals the chamber, and the atmosphere within the processing chamber is evacuated to a desired level. The new wafer is then processed, and the above steps are repeated to remove the wafer once processing has finished.

Sharma discusses an apparatus and method for providing a selected atmosphere at and within an opening to the interior volume of a furnace. Two or more parallel diffusers adjacent to the furnace opening laminarly emit different fluids and provide a multi-layer fluid curtain over the opening. The curtain has a composite modified Froude number from 0.05 to 10, and a thickness at emission of at least 5% of its extent in the flow direction. Partially covering the outside of the curtain is an optional, substantially flat, outer shield with an aperture coinciding with the furnace opening, which reduces the necessary flow rates of fluids. Optional side shields around the sides of the curtain also reduce the necessary fluid flow. A preferred diffuser comprises a porous tube in a housing with an outlet directed to emit fluid across the furnace opening. The outlet is covered with a screen to disperse the fluid flow and to protect the porous tube.

The Office Action acknowledges that Wagener is silent as to the "diffuser 32" comprising a manifold including at least two compartments, wherein each of said compartments is in fluid communication with a respective gas inlet, wherein a perforated element is in fluid communication with said manifold, and wherein one or more elements for diffusing gas is located within each compartment.

While the Office Action recognizes that Wagener does not teach or suggest the perforated element of Claim 1, the Office Action refers to Sharma as teaching an apparatus for dispersing a gas as a multi-layer fluid curtain, wherein the apparatus comprises a manifold including at least two compartments, wherein each of the compartments is in fluid communication with a respective gas inlet, wherein a perforated element (i.e., a screen 52) is in fluid communication with the manifold, and wherein one or more elements for diffusing gas (i.e., a tubular body 42) is located within each compartment. The Office Action contends that it would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute the apparatus for dispersing gas of Sharma for the diffuser 32 in the apparatus of Wagener, on the basis of suitability for the intended use, because the fluid curtain as emitted by the apparatus of Sharma possesses two layers that act cooperatively to stabilize the laminar flow in each layer over a longer distance, thereby extending the effective area of coverage of the layers (see column 2, lines 41-50). Also, asserts the Office Action, the substitution of known equivalent structures involves only ordinary skill in the art.

First, Sharma is concerned with furnaces such as a metal melting furnace, e.g., an electric induction furnace. Although the patentee indicates that the invention has

many applications for providing a selected atmosphere within a contained volume, the disclosure of the reference does not extend beyond metal melting furnaces. One skilled in the art, in developing improvements on an apparatus for transferring a microelectronic device to and from a processing chamber and the use of cryogenic fluids in the processing chamber such as disclosed by Wagener would not look to Sharma for relevant information.

Second, assuming for the sake of argument, the skilled artisan would look to Sharma, the resulting combination of teachings does not yield the presently claimed invention. Neither of the references discloses or suggests, either individually or in combination, the feature of Claim 1 where a perforated element is oriented substantially perpendicular to the gas inlets.

The Office Action asserts, with respect to Claim 5, that Wagener discloses that diffuser 32 can be positioned in a number of locations within chamber 12 as may be desired for a particular application and that diffuser 32 may be adjustably mounted within the chamber 12. Thus, contends the Office Action, it would have been obvious for one of ordinary skill in the art at the time the invention was made to locate the perforated element opposite the opening 28 in the modified apparatus of Wegner on the basis of suitability for the intended use. Furthermore, argues the Office Action, it has been held that the shifting of location of parts merely involves routine skill in the art.

Applicant respectfully traverses this rejection. Applicant points out in the specification that flow of gas through the chamber that is substantially perpendicular to the wall of the chamber comprising the opening does not stagnate or recirculate (page 16, last sentence).

Regarding claim 7, the Office Action contends that the modified apparatus of Wagener structurally meets the claims, since the reagents are not considered an element of the apparatus. However, Claim 7 now recites that the dispensing device is a drop dispensing device. Wagener does not disclose such a drop dispensing device. Wagener employs a nozzle that distributes a stream of particles not drops of fluid. Likewise, Wagener does not disclose or suggest a mechanism for moving a support relative to a drop dispensing device.

New Claims 40-62 are patentable over a combination of Wagener and Sharma since the combined teachings do not disclose or suggest the elements of those claims.

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wagener in view of Sharma, as applied to claim 1 above, and further in view of Vogel

(U.S. Patent No. 5,590,537). Applicant has demonstrated above that Claim 1, from which Claim 4 depends, is patentable over the combined teaching of Wagener and Sharma. Vogel does not cure the deficiencies of those references and, thus, Claim 4 is patentable over the combined teachings of Wagener, Sharma and Vogel by virtue of its dependency from Claim 1.

Claims 6 and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wagener in view of Sharma, as applied to Claim 1 above, and further in view of Yamamoto (JP 63-296845). Applicant has demonstrated above that Claim 1, from which Claims 6 and 11 depend, is patentable over the combined teaching of Wagener and Sharma. Yamamoto does not cure the deficiencies of those references and, thus, Claims 6 and 11 are patentable over the combined teachings of Wagener, Sharma and Yamamoto by virtue of their dependency from Claim 1. Furthermore, Yamamoto is concerned with whirlwind-type draft chambers and one skilled in the art would not look to Yamamoto for information relating to apparatus for providing an evenly distributed flow of gas as in Wagener or a laminar flow of fluid such as in Sharma.

Claims 1-3, 5, 7-10, 12, 13 and 18-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gamble, *et al.* (U.S. Patent No. 5,981,733) in view of Sharma. Gamble discloses an apparatus for the automated synthesis of molecular arrays. A jetting device is employed along with a reaction chamber to dispense reagents used in the synthesis onto the substrate. A positioning system moves the substrate from the jet to the reaction chamber. A controller controls the movement of the substrate and the application of the reagents so that the synthesis is carried out according to a pre-determined procedure. The apparatus will synthesize nucleotides in an array of micron-size spots according to a pattern selected by the operator immediately prior to synthesis.

The Office Action acknowledges that Gamble is silent as to the gas outlet port 194 comprising a manifold including at least two compartments, wherein each of said compartments is in fluid communication with a respective gas inlet, wherein a perforated element is in fluid communication with said manifold, and wherein one or more elements for diffusing gas is located within each compartment. The Office Action argues, however, that Sharma discloses the above elements and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the elements of Sharma in the apparatus of Gamble.

Applicant respectfully traverses this ground of rejection. Even if for the sake of argument the above combination of teachings were made, the resulting combination would not yield the presently claimed invention. Neither of the references discloses or suggests, either individually or in combination, the features of Claim 1 where a perforated element is substantially perpendicular to the gas inlets and where each of the compartments comprises one or more elements for diffusing a gas within said compartment. Therefore, Claim 1 and those claims depending therefrom are patentable over the combined teachings of the references.

In addition, new Claims 40-62 are patentable over a combination of Gamble and Sharma since the combined teachings do not disclose or suggest the elements of those claims.

#### Art Made of Record

Applicant objects to the characterization of Hilson, *et al.* (U.S. Patent No. 6,858,186), Bass, *et al.* (U.S. Patent No. 6,790,620) and Peck (U.S. Patent No. 6,846,454) as prior art since each of these patents resulted from an application filed on December 24, 2001, which is not prior to the filing date of the present application.

#### Conclusion

Claims 1-21 and 40-62 satisfy the requirements of 35 U.S.C. §§112, 102 and 103. Claims 22-39 were canceled herein without prejudice to Applicant's filing of divisional applications to what has been determined to be the separately patentable subject matter thereof. Allowance of the above-identified patent application, it is submitted, is in order.

Respectfully submitted,



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